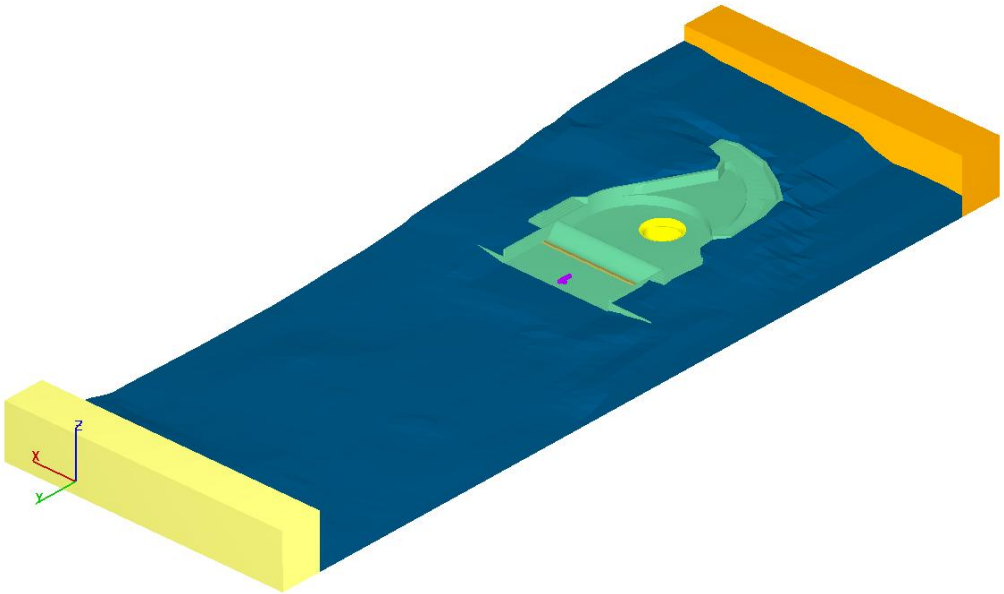
Waller Creek Outlet CFD Modeling Results

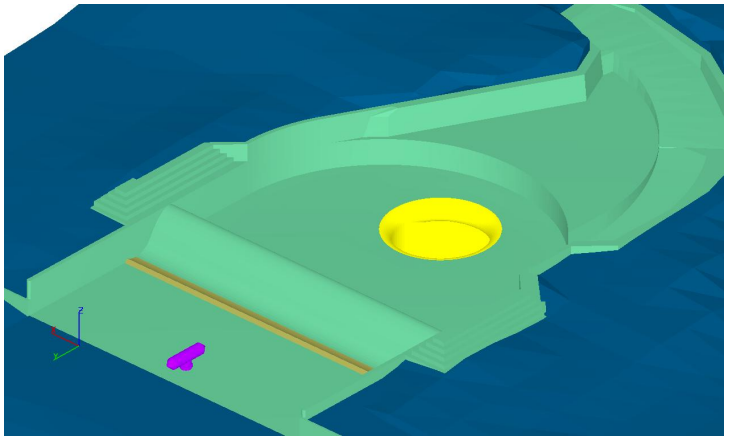
Connection #2 with 1.5’ High Spillway Flip Bucket

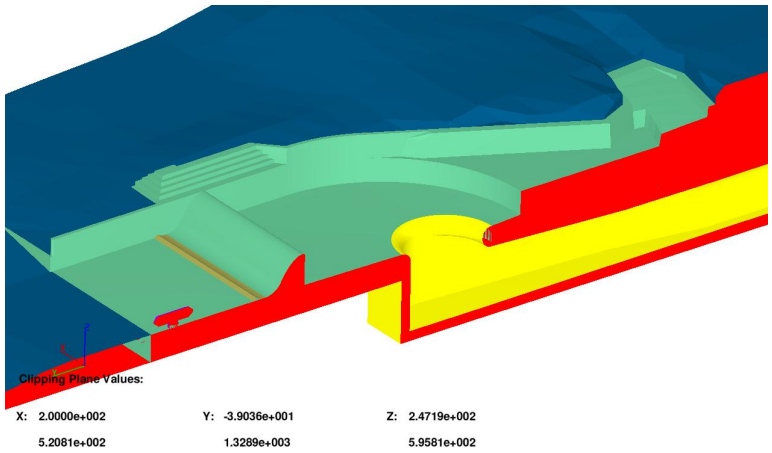
100-Year Flood

Lady Bird Lake Inflow (3.5 ft/s)

General View of the CFD Model

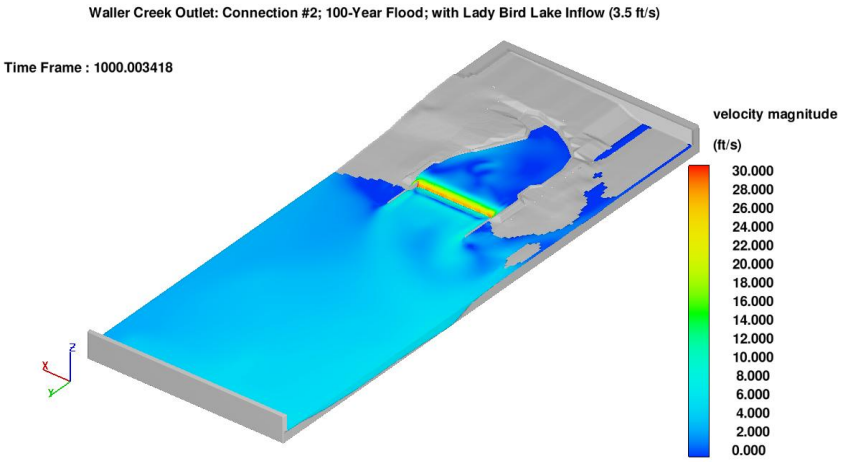




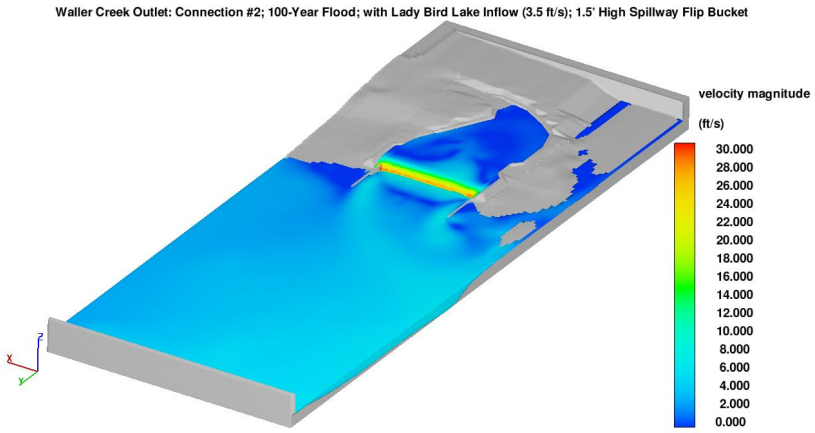


Velocity Contours at Water Surface

3’ High Flip Bucket



1.5’ High Flip Bucket

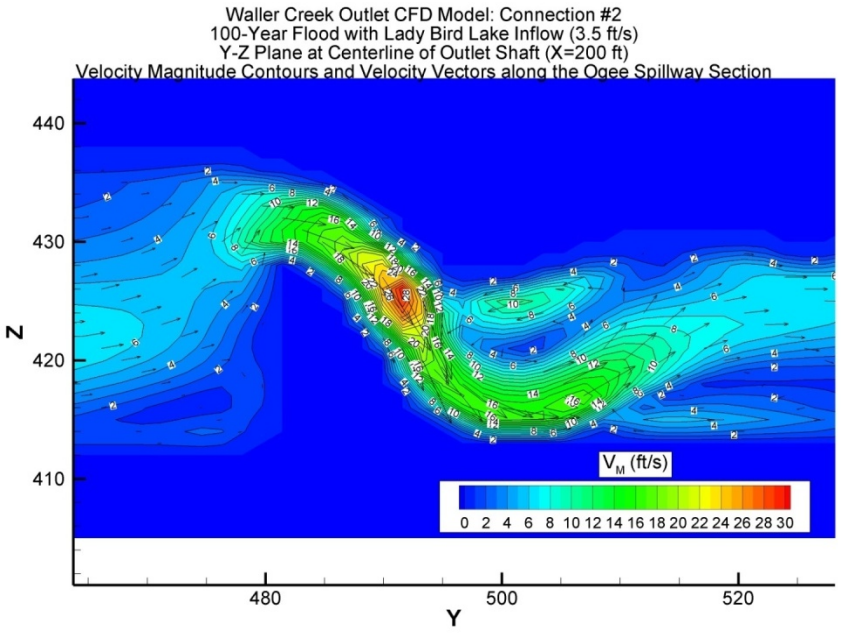


Velocity Profiles

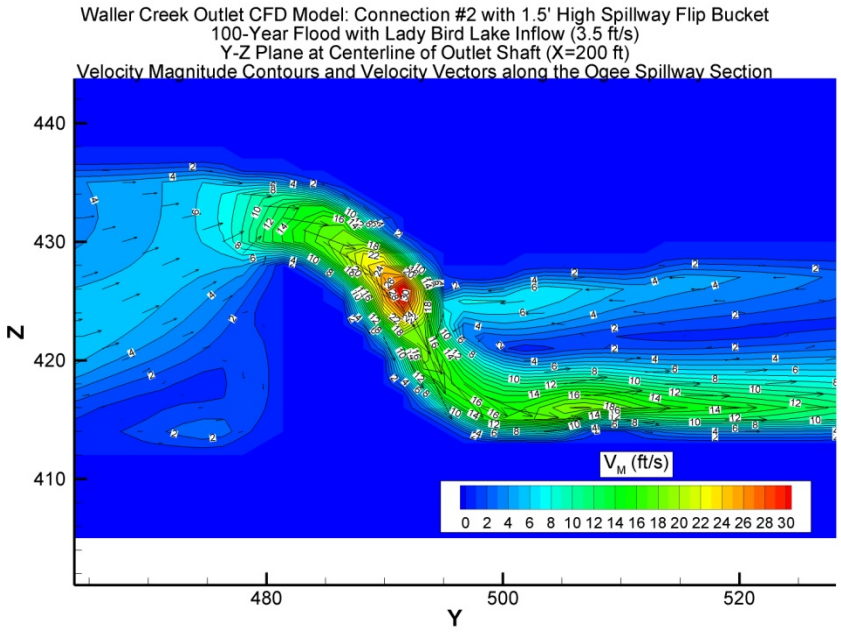
Along the Ogee Spillway Section

Velocity Profile along the Spillway Ogee Section at X=200 ft

3’ high flip bucket

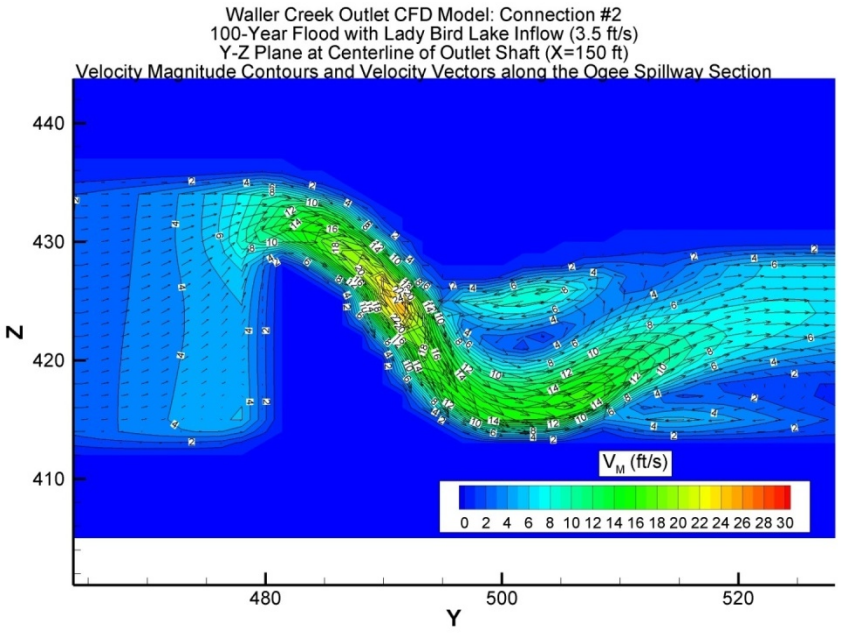


1.5’ high flip bucket

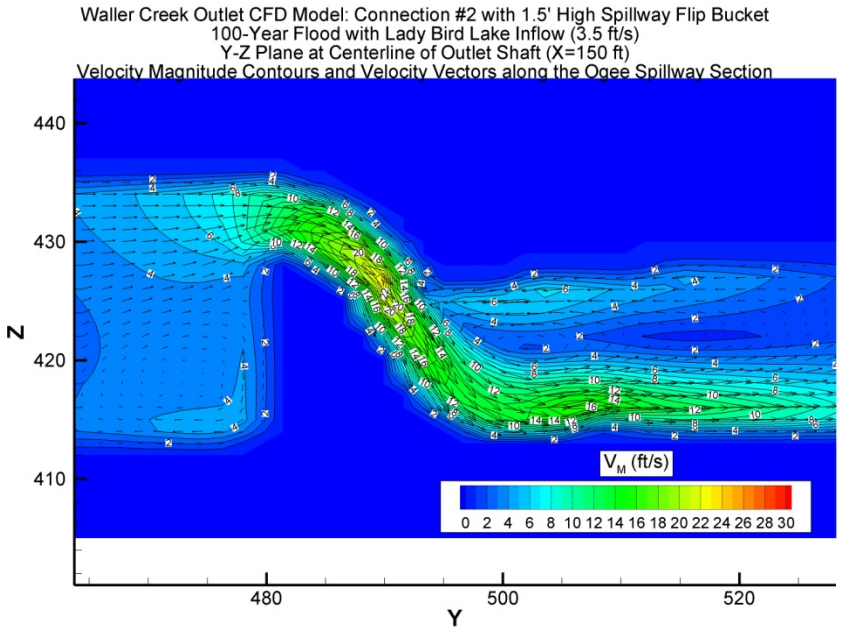


Velocity Profile along the Spillway Ogee Section at X=150 ft

3’ high flip bucket

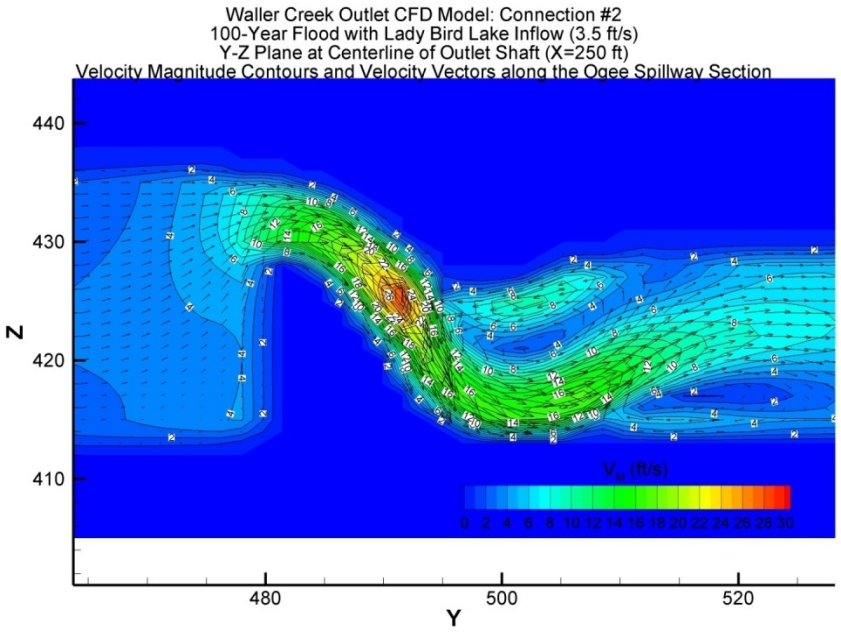


1.5’ high flip bucket

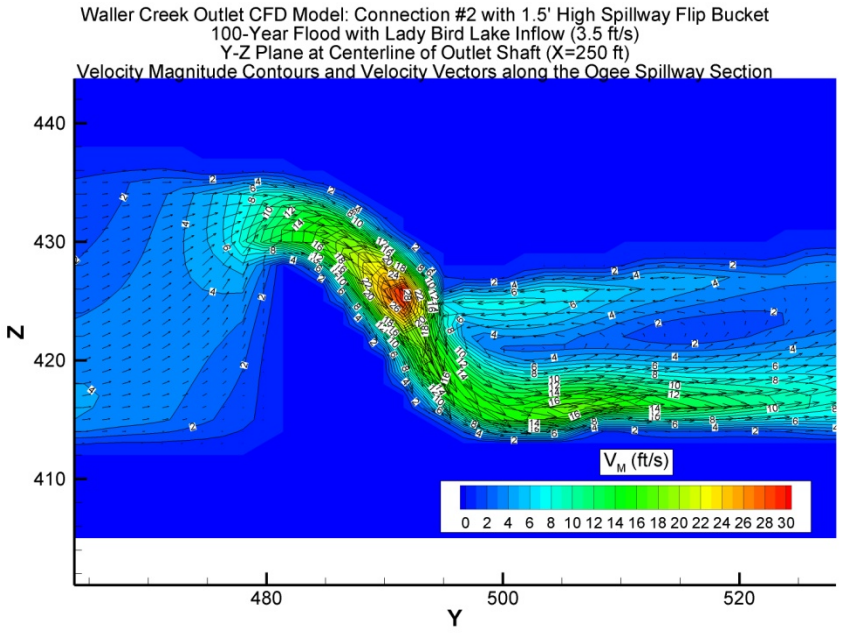


Velocity Profile along the Spillway Ogee Section at X=250 ft

3’ high flip bucket



1.5’ high flip bucket

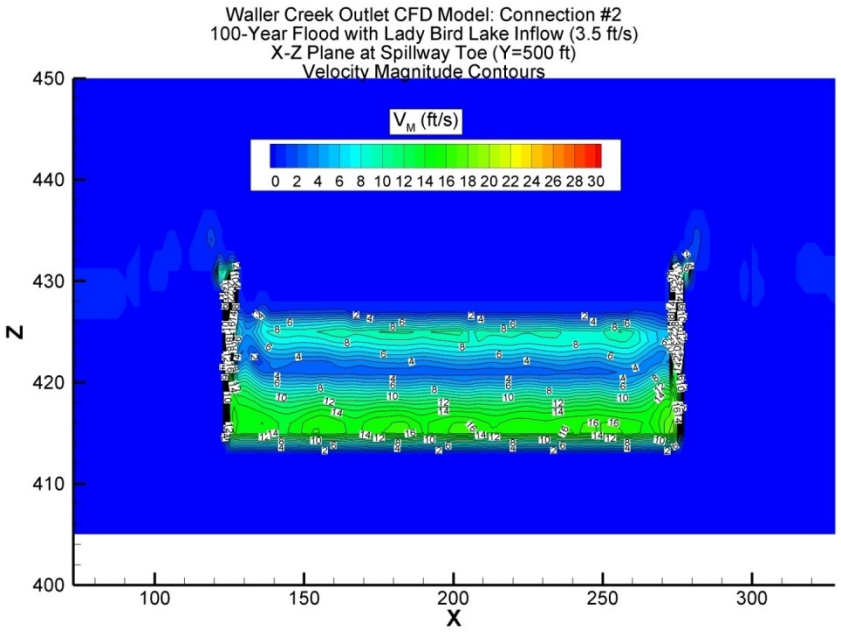


Hydraulic Jump at the Toe of the Spillway

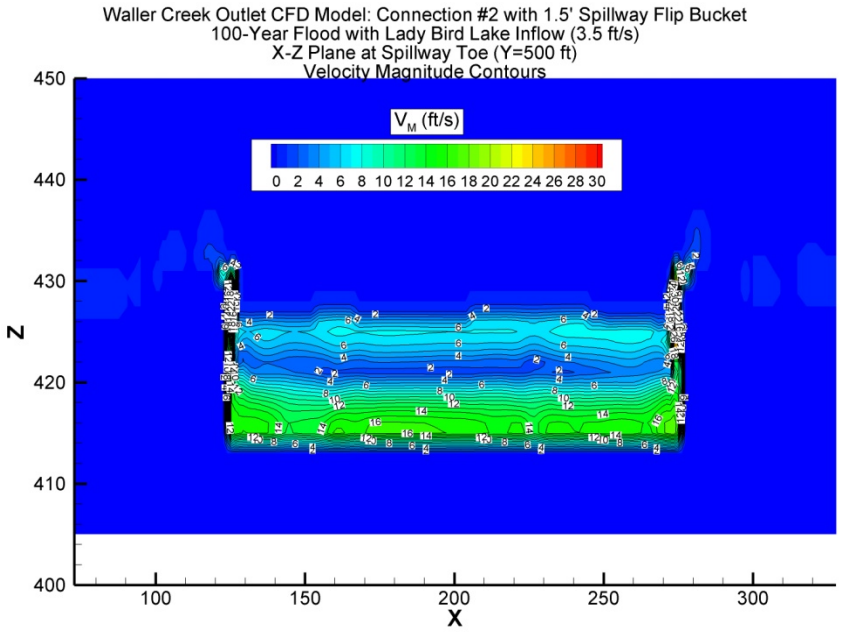
Velocity and Froude Number

Velocity

3’ High Flip Bucket

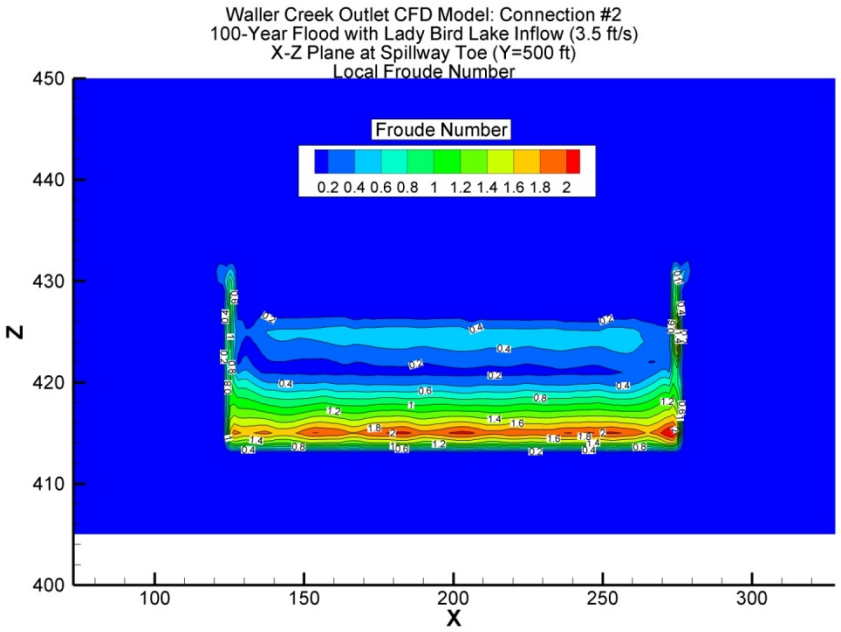


1.5’ High Flip Bucket

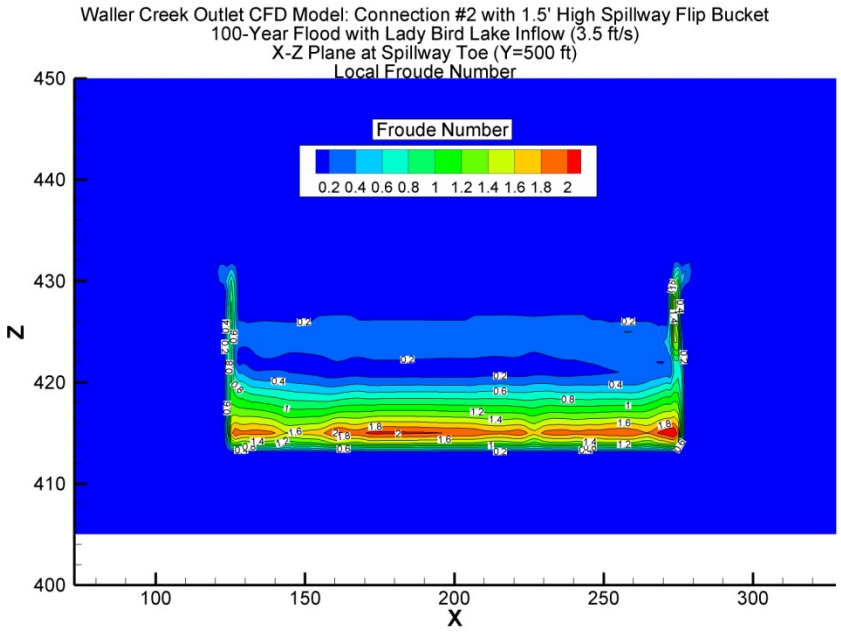


Froude Number

3’ High Flip Bucket



1.5’ High Flip Bucket

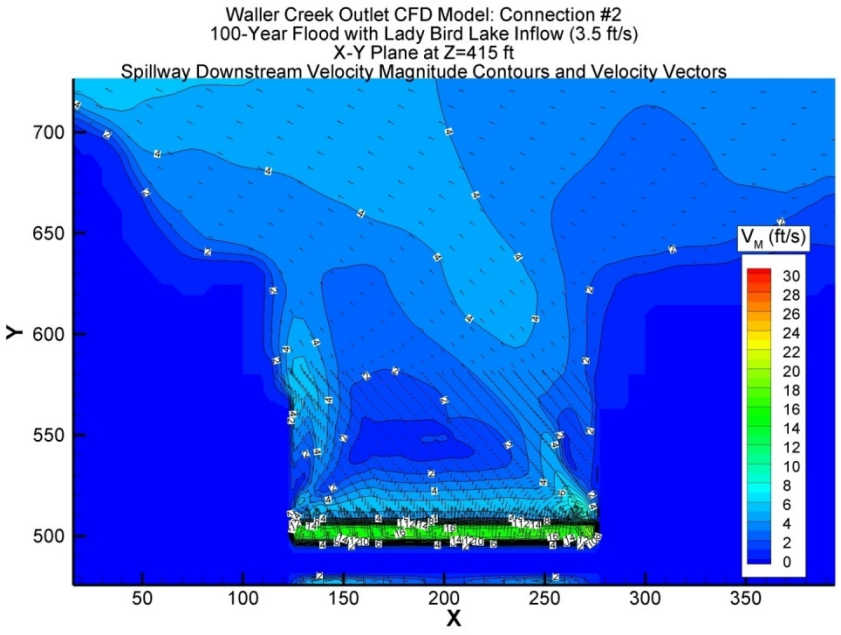


Scour Potential

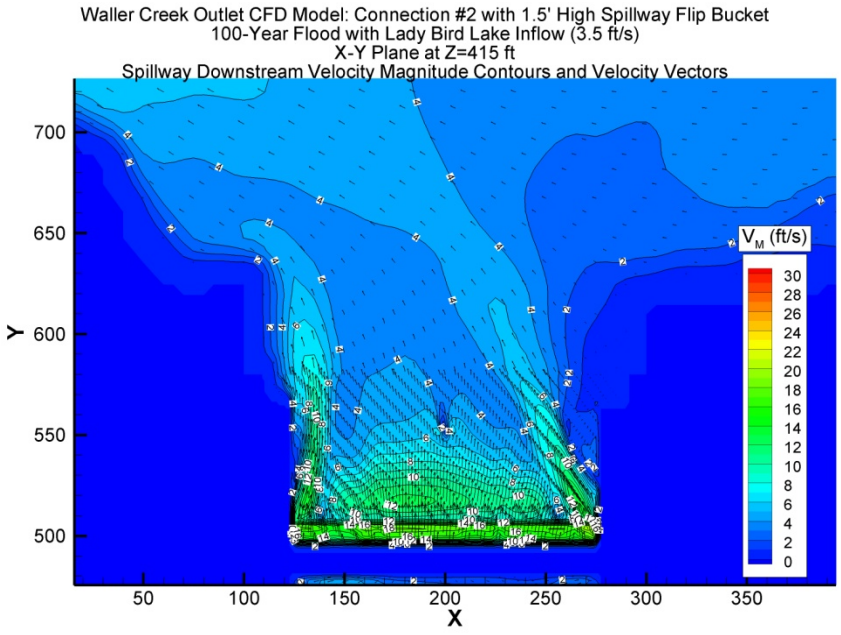
In the Exit Channel, both Concrete Apron and Riprap Section

Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Horizontal Plane at Z=415 ft

3’ High Flip Bucket

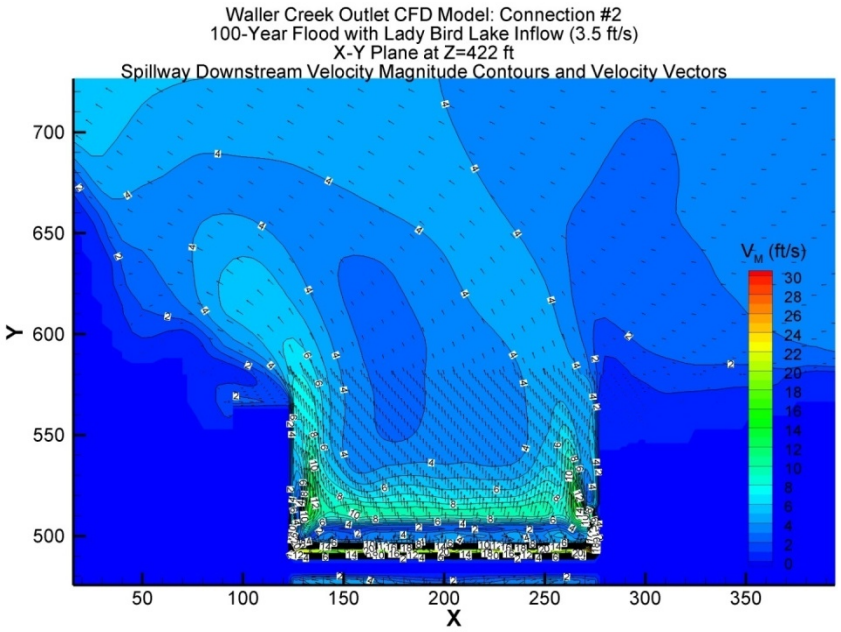


1.5’ High Flip Bucket

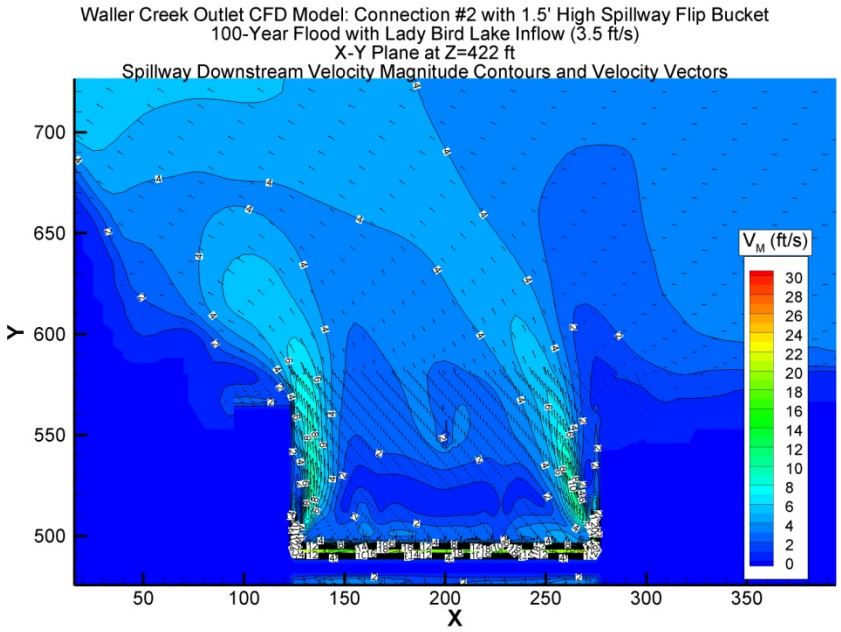


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Horizontal Plane at Z=422 ft

3’ High Flip Bucket

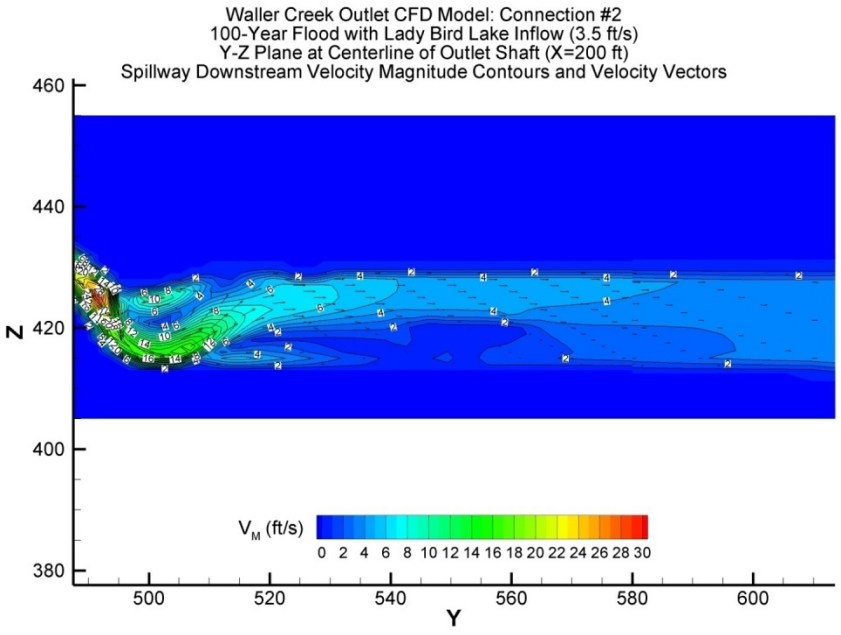


1.5’ High Flip Bucket

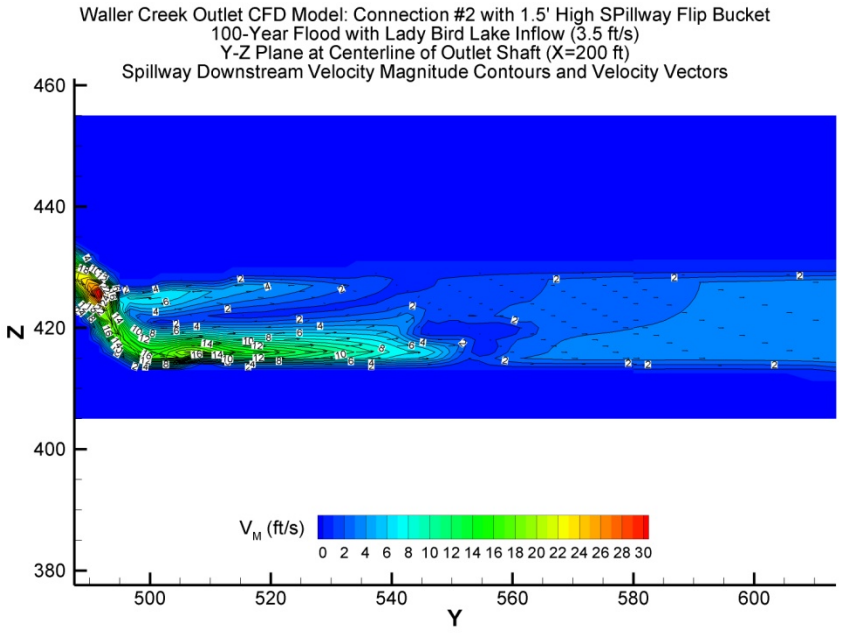


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Longitudinal Plane at X=200 ft

3’ High Flip Bucket

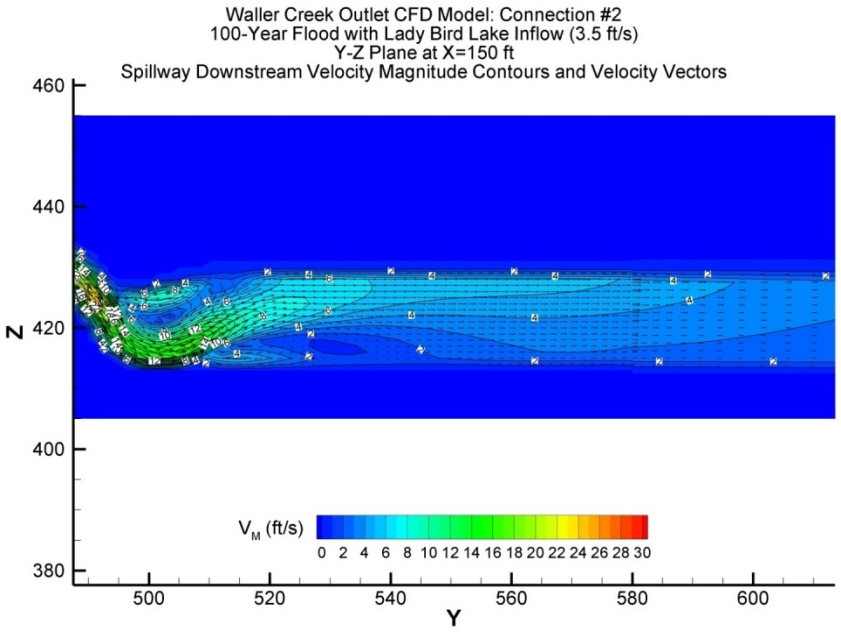


1.5’ High Flip Bucket

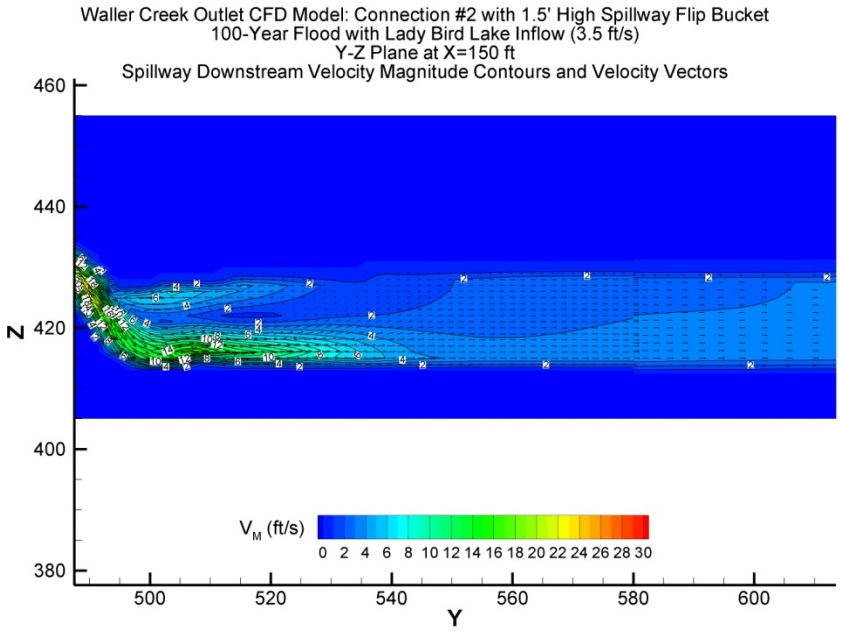


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Longitudinal Plane at X=150 ft

3’ High Flip Bucket

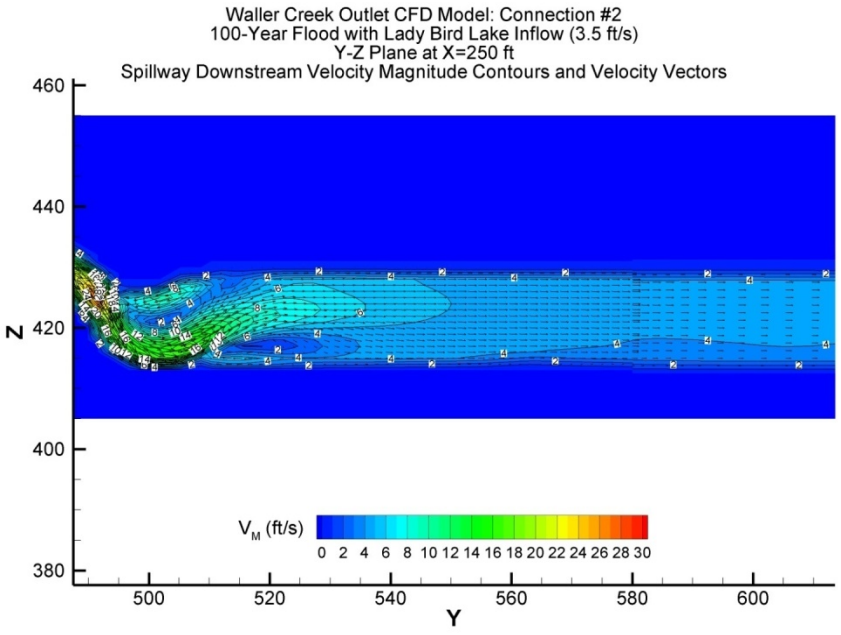


1.5’ High Flip Bucket

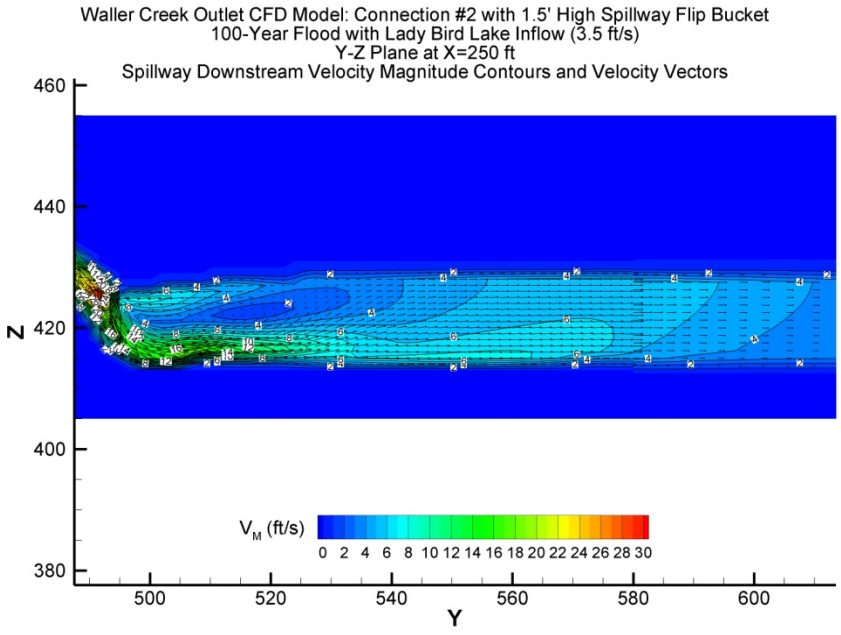


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Longitudinal Plane at X=250 ft

3’ High Flip Bucket

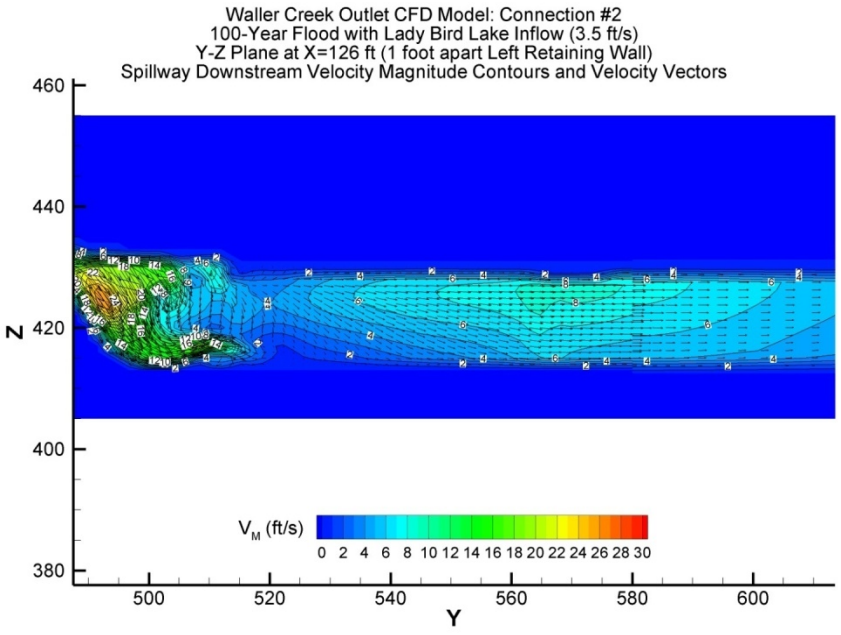


1.5’ High Flip Bucket

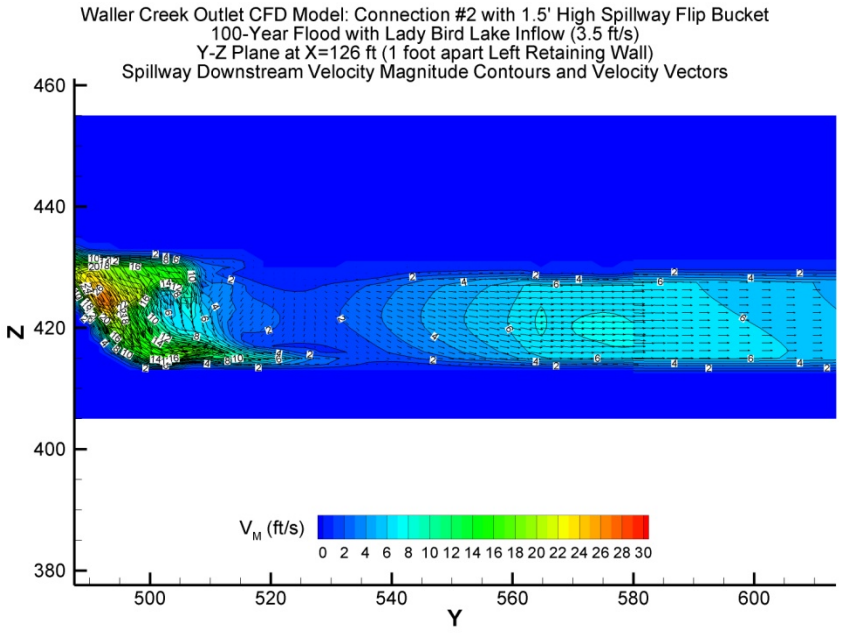


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Longitudinal Plane 1 foot apart Left Retaining Wall

3’ High Flip Bucket

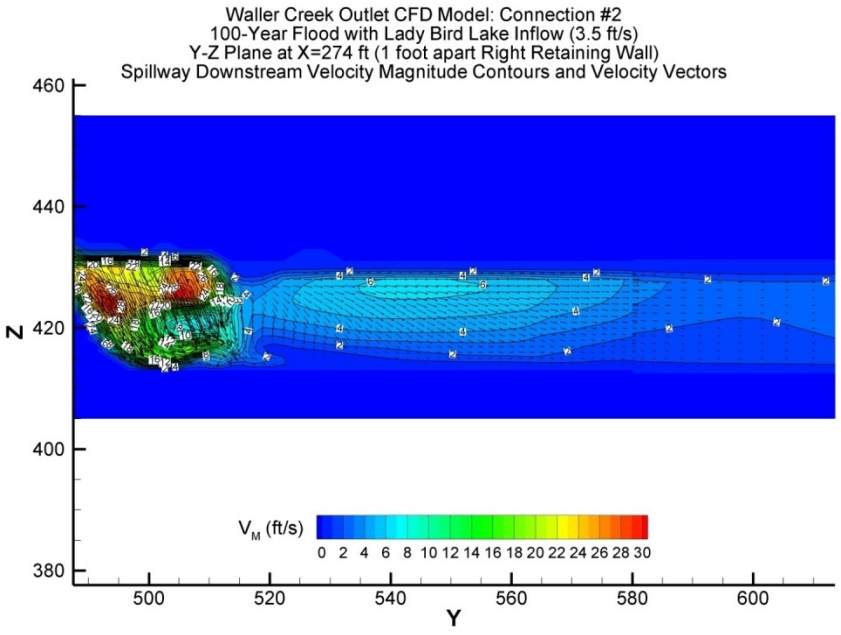


1.5’ High Flip Bucket

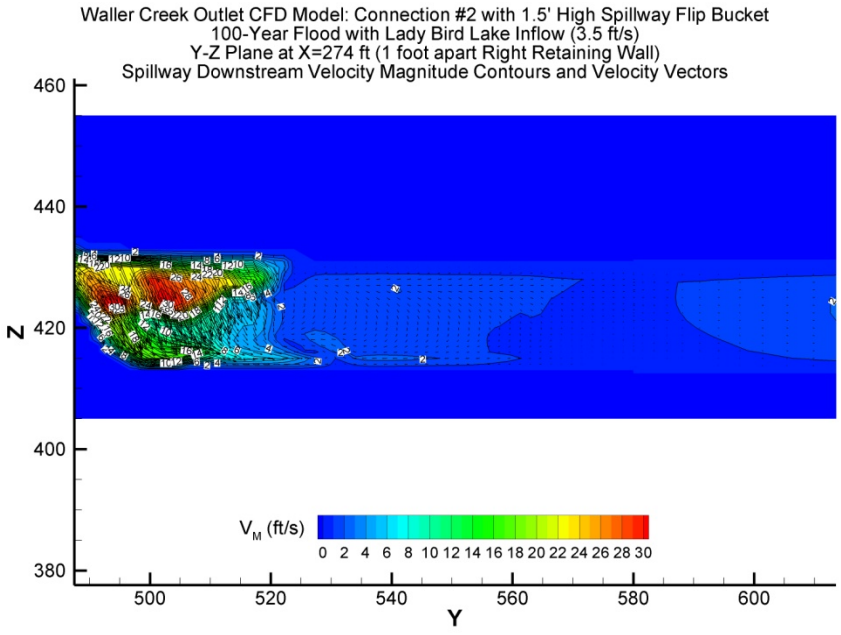


Velocity Magnitude Contours and Velocity Vectors in the Exit Channel in Longitudinal Plane 1 foot apart Right Retaining Wall

3’ High Flip Bucket



1.5’ High Flip Bucket



Pressure Forces

On the Pipe Riser and Water Intake Screen

Pressure Force on Pipe Riser and Water Intake

Time (second)	X-Force (lbf)	Y-Force (lbf)	Z-Force (lbf)	Total (lbf)
Average	**1651**	**1208**	**-776**	**2204**